

**IN THE CLAIMS:**

1.-44. (Canceled)

45. (Currently Amended) ~~The apparatus of claim 31;~~ An apparatus for vaporizing and transporting precursor molecules to a deposition chamber for deposition of a thin film on a substrate, the apparatus comprising:

an ionic liquid source, wherein the ionic liquid is of the formula:



wherein R<sub>1</sub> is alkyl and Y<sup>-</sup> is selected from a group consisting of halides, sulfates, nitrates, acetates, nitrites, tetrafluoroborates, tetrachloroborates, hexafluorophosphates, [SbF<sub>6</sub>]<sup>-</sup>, chloroaluminates, bromoaluminates, chlorocuprates, heteropolyanions, trifluoromethanesulfonates, and mixtures thereof;

a carrier gas source in fluid communication with the ionic liquid source; and

a deposition chamber in fluid communication with the carrier gas source.

46. (Currently Amended) ~~The apparatus of claim 31;~~ An apparatus for vaporizing and transporting precursor molecules to a deposition chamber for deposition of a thin film on a substrate, the apparatus comprising:

an ionic liquid source, wherein the ionic liquid is of the formula:



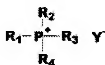
wherein  $R_1$  and  $R_2$  are alkyls and  $Y^-$  is selected from a group consisting of halides, sulfates, nitrates, acetates, nitrites, tetrafluoroborates, tetrachloroborates, hexafluorophosphates,  $[SbF_6]$ , chloroaluminates, bromoaluminates, chlorocuprates, heteropolyanions, trifluoromethanesulfonates, and mixtures thereof;

a carrier gas source in fluid communication with the ionic liquid source; and

a deposition chamber in fluid communication with the carrier gas source.

47. (Currently Amended) ~~The apparatus of claim 31;~~ An apparatus for vaporizing and transporting precursor molecules to a deposition chamber for deposition of a thin film on a substrate, the apparatus comprising:

an ionic liquid source, wherein the ionic liquid satisfies the formula:



wherein  $R_1$ ,  $R_2$ ,  $R_3$ ,  $R_4$  are alkyls and  $Y^-$  is selected from a group consisting of halides, sulfates, nitrates, acetates, nitrites, tetrafluoroborates, tetrachloroborates, hexafluorophosphates,  $[SbF_6]$ , chloroaluminates, bromoaluminates, chlorocuprates, heteropolyanions, trifluoromethanesulfonates, and mixtures thereof;

a carrier gas source in fluid communication with the ionic liquid source; and

a deposition chamber in fluid communication with the carrier gas source.

48. (Currently Amended) ~~The apparatus of claim 31,~~ An apparatus for vaporizing and transporting precursor molecules to a deposition chamber for deposition of a thin film on a substrate, the apparatus comprising:

an ionic liquid source, wherein the ionic liquid satisfies the formula:



wherein R<sub>1</sub>, R<sub>2</sub>, and R<sub>3</sub> are alkyls and Y<sup>-</sup> is selected from a group consisting of halides, sulfates, nitrates, acetates, nitrites, tetrafluoroborates, tetrachloroborates, hexafluorophosphates, [SbF<sub>6</sub>]<sup>-</sup>, chloroaluminates, bromoaluminates, chlorocuprates, heteropolyanions, trifluoromethanesulfonates, and mixtures thereof;

a carrier gas source in fluid communication with the ionic liquid source; and

a deposition chamber in fluid communication with the carrier gas source.

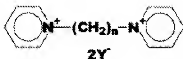
49. (Previously Presented) An apparatus for vaporizing and transporting precursor molecules to a deposition chamber for deposition of a thin film on a substrate, the apparatus comprising:

an ionic liquid source;

a carrier gas source in fluid communication with the ionic liquid source; and

a deposition chamber in fluid communication with the carrier gas source;

wherein the ionic liquid satisfies the formula:



wherein n is from about 1 to about 10 and  $\text{Y}^-$  is selected from a group consisting of halides, sulfates, nitrates, acetates, nitrites, tetrafluoroborates, tetrachloroborates, hexafluorophosphates,  $[\text{SbF}_6]^-$ , chloroaluminates, bromoaluminates, chlorocuprates, heteropolyanions, trifluoromethanesulfonates, and mixtures thereof.

50. (Currently Amended) ~~The apparatus of claim 31.~~ An apparatus for vaporizing and transporting precursor molecules to a deposition chamber for deposition of a thin film on a substrate, the apparatus comprising:

an ionic liquid source, wherein the ionic liquid satisfies the formula:



wherein  $\text{R}_1$ ,  $\text{R}_2$ ,  $\text{R}_3$ ,  $\text{R}_4$  are alkyls and  $\text{Y}^-$  is selected from a group consisting of halides, sulfates, nitrates, acetates, nitrites, tetrafluoroborates, tetrachloroborates, hexafluorophosphates,  $[\text{SbF}_6]^-$ , chloroaluminates, bromoaluminates, chlorocuprates, heteropolyanions, trifluoromethanesulfonates, and mixtures thereof;

a carrier gas source in fluid communication with the ionic liquid source; and

a deposition chamber in fluid communication with the carrier gas source.

51. (Currently Amended) ~~The system of claim 32,~~ A system for vaporizing and transporting precursor molecules to a deposition chamber for deposition of a thin film on a substrate, the system comprising:

an ionic liquid source, wherein the ionic liquid is of the formula:



wherein R<sub>1</sub> is alkyl and Y<sup>-</sup> is selected from a group consisting of halides, sulfates, nitrates, acetates, nitrites, tetrafluoroborates, tetrachloroborates, hexafluorophosphates, [SbF<sub>6</sub>], chloroaluminates, bromoaluminates, chlorocuprates, heteropolyanions, trifluoromethanesulfonates, and mixtures thereof;

a carrier gas source;

a bubbler device for delivering the carrier gas source to the ionic liquid source; and

a deposition chamber in fluid communication with the ionic liquid source to receive vaporized molecules from the ionic liquid source.

52. (Currently Amended) ~~The system of claim 32,~~ A system for vaporizing and transporting precursor molecules to a deposition chamber for deposition of a thin film on a substrate, the system comprising:

an ionic liquid source, wherein the ionic liquid is of the formula:



wherein  $R_1$  and  $R_3$  are alkyls and  $Y^-$  is selected from a group consisting of halides, sulfates, nitrates, acetates, nitrites, tetrafluoroborates, tetrachloroborates, hexafluorophosphates,  $[SbF_6]$ , chloroaluminates, bromoaluminates, chlorocuprates, heteropolyanions, trifluoromethanesulfonates, and mixtures thereof;

a carrier gas source;

a bubbler device for delivering the carrier gas source to the ionic liquid source; and

a deposition chamber in fluid communication with the ionic liquid source to receive vaporized molecules from the ionic liquid source.

53. (Currently Amended) ~~The system of claim 32,~~ A system for vaporizing and transporting precursor molecules to a deposition chamber for deposition of a thin film on a substrate, the system comprising:

an ionic liquid source, wherein the ionic liquid satisfies the formula:



wherein  $R_1$ ,  $R_2$ ,  $R_3$ ,  $R_4$  are alkyls and  $Y^-$  is selected from a group consisting of halides, sulfates, nitrates, acetates, nitrites, tetrafluoroborates, tetrachloroborates, hexafluorophosphates,  $[SbF_6]$ , chloroaluminates, bromoaluminates,

chlorocuprates, heteropolyanions, trifluoromethanesulfonates, and mixtures thereof;

a carrier gas source;

a bubbler device for delivering the carrier gas source to the ionic liquid source; and

a deposition chamber in fluid communication with the ionic liquid source to receive vaporized molecules from the ionic liquid source.

54. (Currently Amended) ~~The system of claim 32;~~ A system for vaporizing and transporting precursor molecules to a deposition chamber for deposition of a thin film on a substrate, the system comprising:

an ionic liquid source, wherein the ionic liquid satisfies the formula:



wherein R<sub>1</sub>, R<sub>2</sub>, and R<sub>3</sub> are alkyls and Y<sup>-</sup> is selected from a group consisting of halides, sulfates, nitrates, acetates, nitrites, tetrafluoroborates, tetrachloroborates, hexafluorophosphates, [SbF<sub>6</sub>]<sup>-</sup>, chloroaluminates, bromoaluminates, chlorocuprates, heteropolyanions, trifluoromethanesulfonates, and mixtures thereof;

a carrier gas source;

a bubbler device for delivering the carrier gas source to the ionic liquid source; and

a deposition chamber in fluid communication with the ionic liquid source to receive vaporized molecules from the ionic liquid source.

55. (Previously Presented) A system for vaporizing and transporting precursor molecules to a deposition chamber for deposition of a thin film on a substrate, the system comprising:

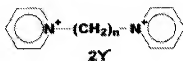
an ionic liquid source;

a carrier gas source;

a bubbler device for delivering the carrier gas source to the ionic liquid source; and

a deposition chamber in fluid communication with the ionic liquid source to receive vaporized molecules from the ionic liquid source;

wherein the ionic liquid satisfies the formula:

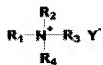


wherein n is from about 1 to about 10 and Y<sup>-</sup> is selected from a group consisting of halides, sulfates, nitrates, acetates, nitrites, tetrafluoroborates, tetrachloroborates, hexafluorophosphates, [SbF<sub>6</sub>]<sup>-</sup>, chloroaluminates, bromoaluminates, chlorocuprates, heteropolyanions, trifluoromethanesulfonates, and mixtures thereof.

56. (Currently Amended) ~~The system of claim 32, A system for vaporizing and transporting precursor molecules to a deposition chamber for deposition of a thin film on a substrate, the system comprising:~~

an ionic liquid source, wherein the ionic liquid satisfies the formula:





wherein R<sub>1</sub>, R<sub>2</sub>, R<sub>3</sub>, R<sub>4</sub> are alkyls and Y<sup>-</sup> is selected from a group consisting of halides, sulfates, nitrates, acetates, nitrites, tetrafluoroborates, tetrachloroborates, hexafluorophosphates, [SbF<sub>6</sub>]<sup>-</sup>, chloroaluminates, bromoaluminates, chlorocuprates, heteropolyanions, trifluoromethanesulfonates, and mixtures thereof;

a carrier gas source;

a bubbler device for delivering the carrier gas source to the ionic liquid source; and

a deposition chamber in fluid communication with the ionic liquid source to receive vaporized molecules from the ionic liquid source.

57. (Canceled)